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EDITORIAL

Prolonged duration of surgery: a new look at the causes

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Prolonged duration of surgery is considered to be a risk factor for the development of surgical site infections. Therefore, duration of surgery above the 75th percentile of a given surgical procedure is entered as one of the risk factors into the National Nosocomial Infection Surveillance System (NNIS) risk index score. The other parameters include an American Society of Anesthesiologists (ASA) score of 3 or greater and a contaminated wound. These three parameters are considered as parameters that are mainly patient-derived risk factors. Therefore, these parameters and the composite NNIS risk index score are used to stratify the surgical site infection risk of a given procedure and perform risk-stratified benchmarking between hospitals.

In this issue of *INFECTION*, Gastmeier et al. report on a study in which they looked at the possible causes for prolonged duration of surgery [1]. Based on data entered into the German national nosocomial infection surveillance system (Krankenhaus Infektions Surveillance System, KISS), they performed various multiple logistic regression analyses in order to examine patient parameters, and also hospital factors, which might have an impact on the duration of surgery.

Among the patient parameters, male sex was a significant risk factor and was significantly associated with prolonged duration of surgery in various surgical procedures, including orthopedic surgery, hernia repair, cholecystectomy, and colon surgery. On the other hand, for most procedures, age above the 75th percentile was associated with a shorter duration of surgery. Among the hospital factors, the fact that surgery was performed in a university hospital was associated with a longer duration of surgery. The same was true for procedures performed in larger hospitals. On the other hand, hospitals with a high number of surgical procedures had a shorter duration of individual surgical procedures.

It is difficult to explain the reasons for the association between all of the observed parameters and prolonged duration of surgery. Focusing on hospital factors, it seems plausible that the duration of surgery is longer in teaching hospitals than in hospitals, where no teaching has to take place during the surgical procedure. It also seems plausible that surgeons with a high number of procedures per year have a shorter duration of surgery due to the fact that they are more experienced than colleagues who perform the same procedure less often. However, these explanations are not sufficient, as also concerning this parameter, an association between prolonged duration of surgery and a low number of procedures per year was not observed for all surgical procedures. The authors, therefore, raise the hypothesis that one possible influence on the duration of surgery might be the quality of the organization of the operating unit. As this parameter has not been surveilled as part of the ongoing case surveillance, this remains a hypothesis for the moment. However, it certainly deserves further investigation, along with a thorough investigation of the impact of good versus suboptimal operating unit management on the incidence of surgical site infection.

This study suggests that the risk for surgical site infection is not explainable by patient factors only. Further

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research into the management of operating units and on the impact of surgeons' experience, patient factors such as gender and age will likely be rewarding in the area of diagnosis-related reimbursement.

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